

# CARD HOLDING STRUCTURE FOR CELLULAR PHONE

## BACKGROUND OF THE INVENTION

### Field of the Invention

5           The present invention relates to a portable terminal such as a cellular phone and, more particularly, to a structure for holding an identification card like the SIM card.

### Description of the Related Art

10           Conventionally, Japanese Patent Laid-Open No. 2001-244004 has proposed an invention relating to a card holding structure in which a SIM (Subscriber Identification Module) card, which is an identification card for a cellular phone, is mounted by being slid and is held on a card connector fixed in a card mounting  
15           portion provided in a case of a portable terminal. According to Japanese Patent Laid-Open No. 2001-244004, this invention is characterized in that a front part of the card is held by a card holding portion provided at a front part in the card sliding direction of the card connector, and a rear part of the card  
20           is held by an internal wall surface of a chargeable battery case cover that is also used as a chargeable battery for the portable terminal.

          However, the chargeable battery case requires a place for fitting it in a housing, and a spring type contact is often used  
25           for electrical connection between the chargeable battery case and the housing. Therefore, if the aforementioned invention is used, the holding of the chargeable battery and the housing

is often unstable, so that there arises a problem in that an error occurs in reading the card.

#### SUMMARY OF THE INVENTION

5       The present invention has been made to solve the above problem, and accordingly an object thereof is to hold a card in a housing and to achieve both high reliability and low cost and expand the mounting area of electrical parts by using an inexpensive SIM card connector.

10       To achieve the above object, the present invention provides a card holding structure having a card insertion port provided in a battery holding concave portion of an internal housing and a slope which is provided near the card insertion port to guide the insertion of a card into the internal housing.

15       Also, the present invention provides a card holding structure having a card connector which is provided on a circuit board to hold a card and means for pressing the card against a card connector in an internal housing.

20       Further, the present invention provides a card holding structure which slides and mounts a card on a SIM card connector fixed on a board in a portable terminal, wherein a front part of the card is held by a card holding portion provided at a front part in the card sliding direction of the SIM card connector; and a slope that is also used as a stopper, which slope is formed  
25 by a rectangular elastic piece one end of which is fixed to a housing, is provided.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a construction view of a card holding structure in accordance with a first embodiment of the present invention;

FIG. 2 is a construction view showing a card holding structure in accordance with a modification of a first embodiment  
5 of the present invention;

FIG. 3 is a sectional view taken along the line C-C of FIG. 1, showing a state in which a card holding structure in accordance with a first embodiment of the present invention is assembled;

FIG. 4 is a perspective view of a card holding structure  
10 in accordance with a second embodiment of the present invention;  
and

FIG. 5 is a perspective view of a card holding structure in accordance with a third embodiment of the present invention.

#### 15 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Embodiments of the present invention will now be described with reference to the accompanying drawings.

FIG. 1 is an exploded perspective view showing a first embodiment of the present invention, showing a card holding  
20 structure for a cellular phone. FIG. 3 is a sectional view showing a state in which the card holding structure shown in FIG. 1 is assembled. In FIGS. 1 and 3, an internal housing 200 is fixed to an external housing 100. The internal housing 200 is formed with a battery holding concave portion 1 to install  
25 a cover that is also used as a battery. The battery holding concave portion 1 is provided with a card insertion port 9 for mounting a card 2.

The card insertion port 9 is provided a slope 4 that is also used as a stopper. The slope 4 is formed by a rectangular elastic piece one end of which is fixed to the housing so as to slide the card 2 on the slope 4. The card 2 is inserted through the card insertion port 9. At both sides at a front part (direction A) of the inserted card, there are provided the card holding portions 8 of a card connector 3 lying on a circuit board 7 in the housing. The card holding portions 8 holds the inserted card. Also, the end face at a rear part (direction B) of the card 2 comes into contact with the slope 4 provided in the internal housing 200 to prevent the card 2 from popping out. Thus, the card 2 is fixed without moving.

Also, the internal housing 200 has a card receiving portion 5 to prevent the card 2 from sinking due to a force to the circuit board 7 when the card 2 is taken out through the card insertion port 9 by hand. Thereby, the deflection of the card 2 is made fixed, and a burden on the card 2 is alleviated. Since the card receiving portion 5 is not provided under the slope 4, a space between the slope 4 and the circuit board 7 can be secured as a parts mounting space.

The slope 4 that is also used as a stopper may be formed by two separate parts of a slope 13 and a stopper 14 as shown in a modification shown in FIG. 2.

In FIG. 3, the card 2 is pressed against the card connector 3 on the circuit board 7 in the housing by a protrusion 10 provided on the internal housing 200 so that the card connector 3 comes into contact with the card 2. A contact pressure is secured by the card connector 3 and the protrusion 10. Also, in the

battery holding concave portion 1, a holding rib 11 is provided on the end face in front of the card to hold the position of the card 2. The card 2 comes into contact with a connector contact 12 at a proper or predetermined position by the holding rib 11.

5       As described above, in the first embodiment of the present invention, the slope 4 prevents the card 2 from popping out, and the internal housing 200 presses the card 2 against the card connector 3, so that an electrical part mounting area can be expanded while the reliability is maintained.

10       FIG. 4 is a perspective view of a card holding structure for a cellular phone in accordance with a second embodiment of the present invention. In FIG. 4, a slope 40 that is also used as a stopper, one end of which is fixed to the housing, is provided at the card insertion port 9. It is preferable that the slope  
15 40 have a shape such that one corner at the rear of the card is cut to show the direction in which the card is inserted. By making the shape of the slope 40 same as that of the card 2, it can be expected to reduce mistaken insertion of the card 2. For other cards, the shape of the slope 40 is subject to the  
20 shape of that card.

FIG. 5 is a perspective view for illustrating a cellular phone in accordance with a third embodiment of the present invention. In FIG. 5, a check opening 6 is provided to check whether the card 2 has been inserted in the housing exactly.  
25 In case the card cannot be taken out, the card can be pushed out with a finger or a rod-shaped object through the check opening 6.

As described above, according to the card holding structure in accordance with the present invention, some of holding operation for the identification card can be performed within the housing, and hence the cost can be reduced. Also, the card  
5 can be held more stably than in the case where the card is held by a battery cover.